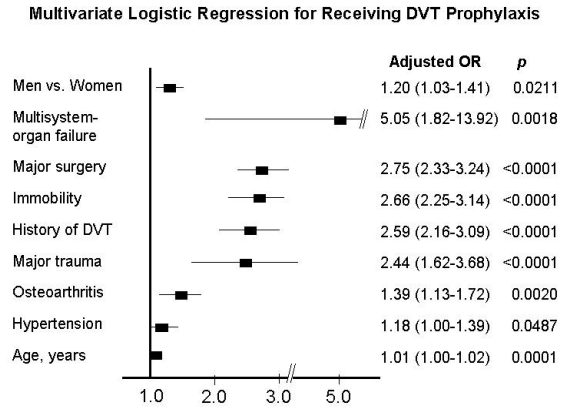

Noon

1001-14 **A New Approach to Anticoagulation Therapy: The Fiscal and Quality Impact of Computerized Decision Support and Point of Care Testing**

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Background: Improved use of anticoagulation therapy has been identified as a priority for the National Stroke Medicare Quality Improvement Project. Specialized anticoagulation clinics have been shown to improve quality of care, but are limited by expense and degree of expertise required. To address these issues, we evaluated a new approach to anticoagulation therapy, utilizing Point of Care (POC) testing in combination with computerized decision support (CDS).
Methods: As part of a National Institutes of Health supported study, two clinic systems were examined with respect to approaches used for anticoagulation and clinical results achieved. One system (patient control group, n=51) used a traditional approach consisting of centralized laboratory testing, paper based record keeping and telephone contact. Another system (patient test group, n=139) utilized an experimental approach combining POC testing and CDS. Endpoints included: 1. Frequency of test results within therapeutic range; 2. Documentation of treatment indication, INR goal, therapy duration, and testing intervals; 4. Treatment related complications and costs; 5. Fiscal impact on participating systems.
Re**sults:** Over a one-year period, test and control groups were compared with respect to the endpoints listed. For the test group, INR compliance was 62%, compared to 38% for the control group ($p<0.01$). Documentation of INR goal and indication for therapy were 100% for test patients, as opposed to 40% and 35% for controls, respectively. Compliance with testing intervals was 86% for the test group, and 51% for controls ($p<0.01$). The test group generated new revenue of $320.56 per patient per year, with labor related overhead costs reduced by 74%. In the controls, 13 complications occurred, costing $336,347.44. The test group experienced 4 complications, with costs totaling $225.00, for a relative risk reduction of 89%, odds ratio = 0.11 (95% CI = 0.0352, 0.3622). Potential cost savings totaled $6614.00 per patient.
Conclusion: An approach combining CDS and POC testing can significantly improve the quality of care for patients on anticoagulation, while reducing system health care costs and improving fiscal performance of providers.

Noon

1001-15 **Abnormal Calcium Handling and Focal Source Ventricular Fibrillation During Subacute Myocardial Infarction in Rabbits**

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Background The relationship between intracellular calcium (Cai) transients and the mechanisms of ventricular fibrillation (VF) during subacute MI is unclear.
Methods We created MI in 8 rabbits. The hearts were removed 5-7 days later, Langendorff-perfused, and mapped simultaneously for membrane potential (RH237) and Cai transients (Rhod-2) using two charge-coupled device cameras. Action potential duration restitution (APDR) was determined by dynamic pacing protocol. Cytochalasin-D (5 µmol/L) was used to suppress motion.
Results Size of MI was 27.2 ± 8.6 %. Cai transient alternans occurred in the peri-infarct area at a longer pacing cycle length (PCL) than the non-infarcted area. The longest PCL associated with Cai transient alternans was 218 ± 47 ms, which was associated with (2/8) or without (6/8) concomitant Vm alternans at that site. The same site also had the steepest maximum APDR slope (1.92 ± 0.90). During electrically induced VF, the same area had the highest dominant frequency (18.1 ± 2.2 Hz) and the highest incidence of wavebreaks. No stationary reentry was observed. The correlation coefficient between dominant frequency in VF and the maximum slope of APDR curve was 0.81± 0.10 ($p< 0.001$). Among 20 ventricular premature beats (VPBs) arising from the peri-infarct area, 8 (40%) were preceded by spontaneous Cai oscillations and delayed afterdepolarizations.
Conclusions (a) High frequency focal sources are present in the peri-infarct area during VF in a rabbit model of subacute MI. (b) Abnormal Cai transients, steep ADPR and multiple wavebreaks are present at these high frequency focal sources of VF. (c) VPBs from peri-infarct area are often induced by spontaneous Cai oscillations and delayed afterdepolarizations.

Noon

1001-16 **Bipolar Radiofrequency Isolation of the Pulmonary Veins for Treatment of Atrial Fibrillation**

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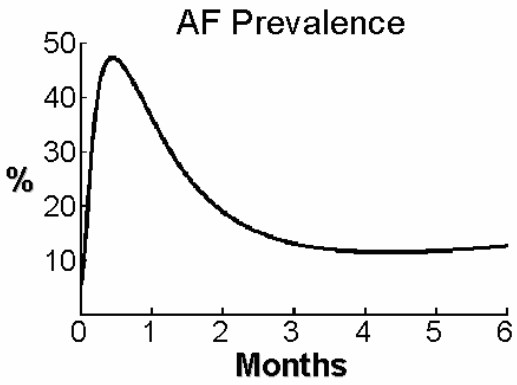
Objectives: To determine safety and time-related clinical effectiveness of bipolar radiofrequency isolation of the pulmonary veins in patients with symptomatic atrial fibrillation (AF) undergoing open heart surgery.
Methods and Results: From November 2001 to April 2003, 134 patients underwent surgical ablation of AF using a bipolar clamp (AtriCure®). Mean age was 68 years and 54% were men.Median preoperative duration of AF was 24 months. AF was paroxysmal in 24%, persistent in 25% and permanent in 51%. Mean left atrial diameter was 5.4±0.96 cm. Patients were followed with Holter monitoring for a median of 5 days post OP. All patients had bilateral pulmonary vein isolation and excision or exclusion of the left atrial appendage and 44% had right atrial lesions. Mean ablation time was 16 minutes. Moreover Holter monitoring was conducted at 2, 3 and 6 months. Time-related prevalence of AF was determined by nonlinear mixed-model data analysis with temporal decomposition to accommodate different risk factors in different time frames, a novel technique. There were no complications related to the pulmonary vein isolation using the bipolar clamp. Long term Prevalence of AF decreased to 15% by 3 months after surgery (figure 1). **Conclusions:** From our preliminary experience intraoperative bipolar radiofrequency ablation of AF seems to be rapid, safe and effective. Early postoperative AF is common, but does not seem to predict long-term cure.



Noon

1001-17 **Cardiac Conduction System-L acZ Expression in the Atrioventricular Ring and Moderator Band of Transgenic Murine Embryos: A Developmental Substrate for Wolff-Parkinson-White Syndrome and Mahaim Tachycardia?**

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Background: Atrioventricular and atriofascicular (Mahaim) fibers can cause ventricular pre-excitation and sustain atrioventricular (AV)-re-entrant tachycardias, such as observed in the Wolf-Parkinson-White (WPW) syndrome and Mahaim tachycardia. The morphological substrate for initiation of these tachycardias has not been elucidated. The CCS(cardiac conduction system)-lacZ construct is able to delineate the developing and mature cardiac conduction system. The aim of this study was to examine the localization of the developing AV conduction system in the CCS/lacZ reporter mouse, focusing on AV-connections.
Methods: Analysis of lacZ-expression during sequential stages of cardiogenesis was performed in a line of CCS-lacZ transgenic mice (E 9,5-15,5). Embryos were stained for beta-galactosidase activity. Alternate sections were stained with the myocardial marker HHF35 to produce a double staining with the reporter construct. Results were constructed into 3-D-images.
Results: Expression was observed in the sino-atrial node, left and right venous valves and septum spurium, Bachman's bundle, the left atrial dorsal wall and in later stages surrounding the pulmonary veins, the His bundle and bundle branches. Furthermore CCS-lacZ expression was present in both the right and left atrioventricular ring, which became fibrous in later stages. After formation of the right ventricular inlet component, CCS-lacZ expression in the right ventricular moderator band was found to connect to the right bundle branch and extended laterally up to connect to the right AV-ring. Thus a direct con-